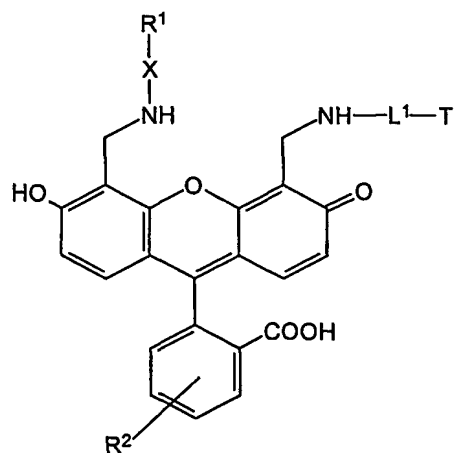


What is claimed is:

1. A compound of the formula:

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wherein:

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R^1 is an acceptor dye selected from the group consisting of xanthine dyes, rhodamine dyes and cyanine dyes and wherein R^1 is capable of accepting energy from a fluorescein donor chromophore;

20

L^1 is a linker chain containing from 2 – 50 linked atoms selected from carbon oxygen, nitrogen, sulphur and phosphorus atoms;

wherein

said chain optionally includes one or more positively or negatively charged groups or one or more unsaturated groups selected from $-CR=CR-$ and $-C\equiv C-$, wherein R represents hydrogen or a $C_1 - C_4$ alkyl;

25

or

said chain optionally includes one or more positively or negatively charged groups and one or more unsaturated groups selected from $-\text{CR}=\text{CR}-$ and

$-\text{C}\equiv\text{C}-$, wherein R represents hydrogen or a $\text{C}_1 - \text{C}_4$ alkyl;

5 R^2 represents H, COOR or CH_2OR ; or a chain L^2 containing from 2 – 30 linked atoms selected from carbon oxygen, nitrogen, sulphur and phosphorus atoms; wherein

said chain optionally includes one or more positively or negatively charged groups or one or more unsaturated groups selected from $-\text{CR}=\text{CR}-$ and

10 $-\text{C}\equiv\text{C}-$, wherein R is defined as above;

or

said chain optionally includes one or more positively or negatively charged groups and one or more unsaturated groups selected from $-\text{CR}=\text{CR}-$ and

$-\text{C}\equiv\text{C}-$, wherein R is defined as above;

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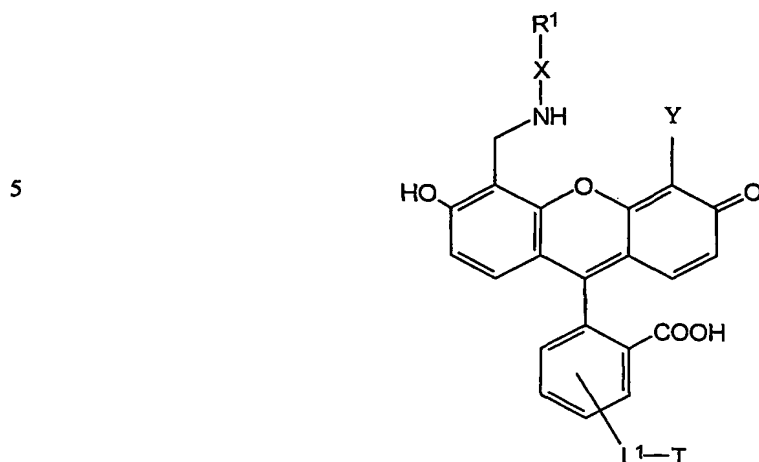
X is selected from $\begin{array}{c} \diagup \\ \text{CH}_2 \\ \diagdown \end{array}$, $\begin{array}{c} \diagup \\ \text{C}=\text{O} \\ \diagdown \end{array}$ or $\begin{array}{c} \diagup \\ \text{C}=\text{S} \\ \diagdown \end{array}$; and

T is a Biological Molecule.

20

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2. A compound of the formula:



wherein:

R^1 is an acceptor dye selected from the group consisting of xanthine dyes, rhodamine dyes and cyanine dyes and wherein R^1 is capable of accepting energy from a fluorescein donor chromophore;

15

L^1 is a linker chain containing from 2 – 50 linked atoms selected from carbon oxygen, nitrogen, sulphur and phosphorus atoms;

wherein

20 said chain optionally includes one or more positively or negatively charged groups or one or more unsaturated groups selected from $-CR=CR-$ and $-C\equiv C-$, wherein R represents hydrogen or a $C_1 - C_4$ alkyl;

or

25 said chain optionally includes one or more positively or negatively charged groups and one or more unsaturated groups selected from $-CR=CR-$ and

$-\text{C}\equiv\text{C}-$, wherein R represents hydrogen or a $\text{C}_1 - \text{C}_4$ alkyl;

Y represents H, CH_2NH_2 , CH_2NHCOR wherein R is defined as above, or CH_2OR wherein R is defined as above; or a chain L^2 containing from 2 – 30 linked atoms selected from carbon oxygen, nitrogen, sulphur and phosphorus atoms;
 5 wherein

said chain optionally includes one or more positively or negatively charged groups or one or more unsaturated groups selected from $-\text{CR}=\text{CR}-$ and

$-\text{C}\equiv\text{C}-$, wherein R is hereinbefore defined;

10 or

said chain optionally includes one or more positively or negatively charged groups and one or more unsaturated groups selected from $-\text{CR}=\text{CR}-$ and

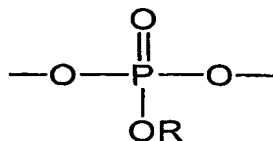
$-\text{C}\equiv\text{C}-$, wherein R is hereinbefore defined;

15

X is selected from CH_2 , $\text{C}=\text{O}$ or $\text{C}=\text{S}$; and

T is a Biological Molecule.

3. The compound of claim 1 or 2 wherein L^1 is a C_{2-50} alkyl chain wherein said chain
 20 optionally includes one or more groups selected from $-\text{C}(\text{O})-$, $-\text{C}(\text{S})-$, $-\text{NR}-$, $-\text{N}^+\text{R}_2-$, $-\text{O}-$, $-\text{S}-$, $-\text{CR}=\text{CR}-$, $-\text{C}\equiv\text{C}-$, $-\text{CO}-\text{NR}-$ and

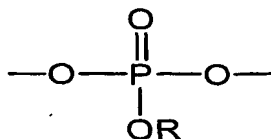


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groups, where R is defined as in claim 1 or 2.

4. The compound of claim 1 or 2 wherein L^2 is a C_{2-30} alkyl chain wherein said chain optionally includes one or more groups selected from $-C(O)-$, $-C(S)-$, $-NR-$, $-N^+R_2-$, $-O-$, $-S-$, $-CR=CR-$, $-C\equiv C-$, $-CO-NR-$ and

5



groups, where R is defined as in claim 1 or 2

- 10 5. The compound of claim 1 or 2 wherein T is selected from the group consisting of: nucleosides, nucleotides, nucleotide derivatives, oligonucleotides, oligonucleotide derivatives, polynucleotides, polynucleotide derivatives, peptides, proteins, and carbohydrates.

- 15 6. The compound of claim 1 or 2 wherein T is selected from the group consisting of ribonucleotides, 2'- or 3'-deoxyribonucleotides, and 2,3'-dideoxyribonucleotides.

7. The compound of claim 1 or 2 wherein T is a nucleoside-5'-mono, di, or triphosphate.

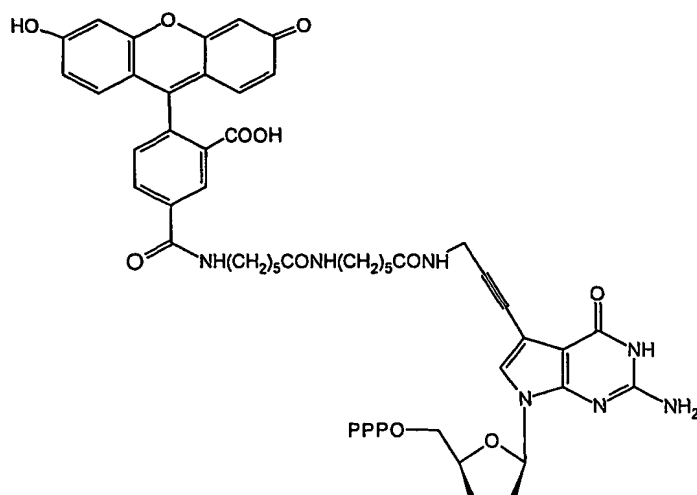
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8. The compound of claim 1 or 2 wherein T is a dideoxynucleoside-5'-triphosphate selected from the group consisting of 2',3'-dideoxycytidine-5'-triphosphate, 2',3'-dideoxythymidine-5'-triphosphate, 2',3'-dideoxyuridine-5'-triphosphate, 2',3'-dideoxyadenosine-5'-triphosphate, 2',3'-dideoxyguanosine-5'-triphosphate and 2',3'-dideoxyinosine-5'-triphosphate, 2',3'-dideoxy-7-deazaadenosine-5'-
- 25

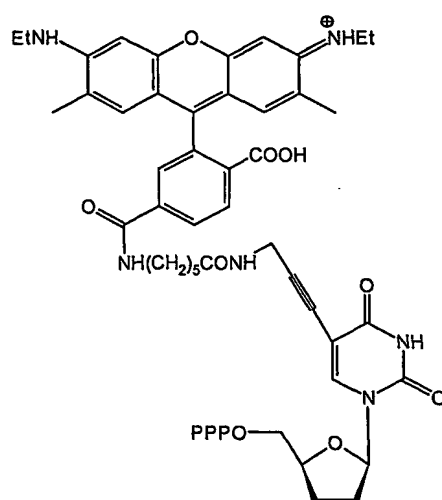
triphosphate, 2',3'-dideoxy-7-deazaguanosine-5'-triphosphate, 2',3'-dideoxy-7-deazainosine-5'-triphosphate, and 3'-fluoro, 3'-azido, 3'-amino, or 3'-thio derivatives of the above.

- 5 9. The compound of claim 1 or 2, wherein L¹ is attached to said target molecule at the C-5 position when said target molecule contains a pyrimidine and at the C-7 position when said target molecule contains a 7-deazapurine.
- 10 10. The compound of claim 1 or 2, wherein R₁ is selected from the group consisting of: fluorescein, naphthofluorescein, rhodol, 5-carboxyrhodamine, 6-carboxyrhodamine, 5-carboxyrhodamine-6-G, 6-carboxyrhodamine-6-G, N, N, N', N'-tetramethyl-5-carboxyrhodamine, N, N, N', N'-tetramethyl-6-carboxyrhodamine, 5-carboxy-X-rhodamine, 6-carboxy-X-rhodamine, Cy3 (3-(ε-carboxypentyl)-1'-ethyl-3, 3, 3', 3'-tetramethyl-5, 5'-disulphonato-carbocyanine),
 15 Cy3.5 (3-(ε-carboxypentyl)-1'-ethyl-3, 3, 3', 3'-tetramethyl-4, 5, 4', 5'-(1, 3-disulphonato)dibenzo-carbocyanine, Cy5 (3-(ε-carboxypentyl)-1'-ethyl-3, 3, 3', 3'-tetramethyl-5, 5'-disulphonato)dibenzo-dicarbocyanine, Cy5.5 ((3-(ε-carboxypentyl)-1'-ethyl-3, 3, 3', 3'-tetramethyl-4, 5, 4', 5'-(1, 3-disulphonato)dibenzo-dicarbocyanine, and Cy7 ((3-(ε-carboxypentyl)-1'-ethyl-3,
 20 3, 3', 3'-tetramethyl-5, 5'-(1, 3-disulphonato)tricarbocyanine.

11. A compound of the formula:



12. A compound of the formula:



13. A compound of the formula:

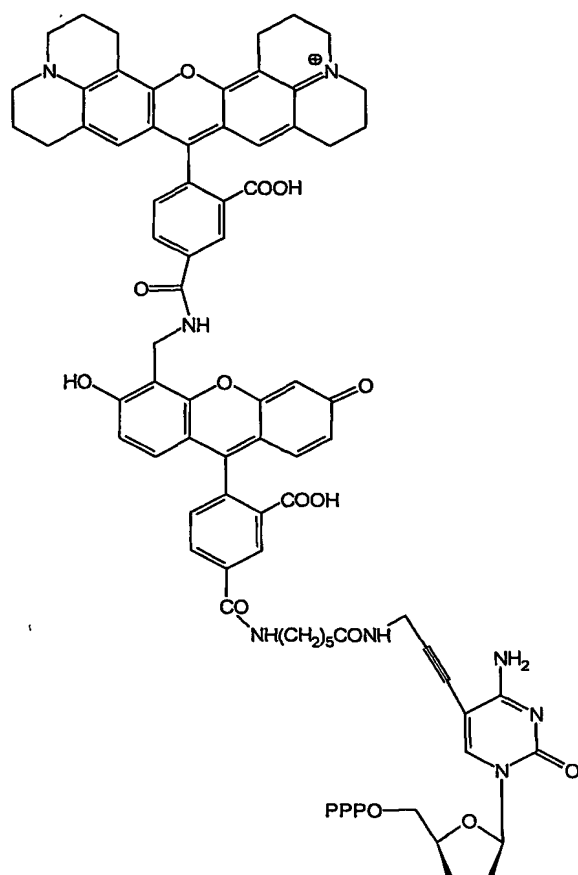
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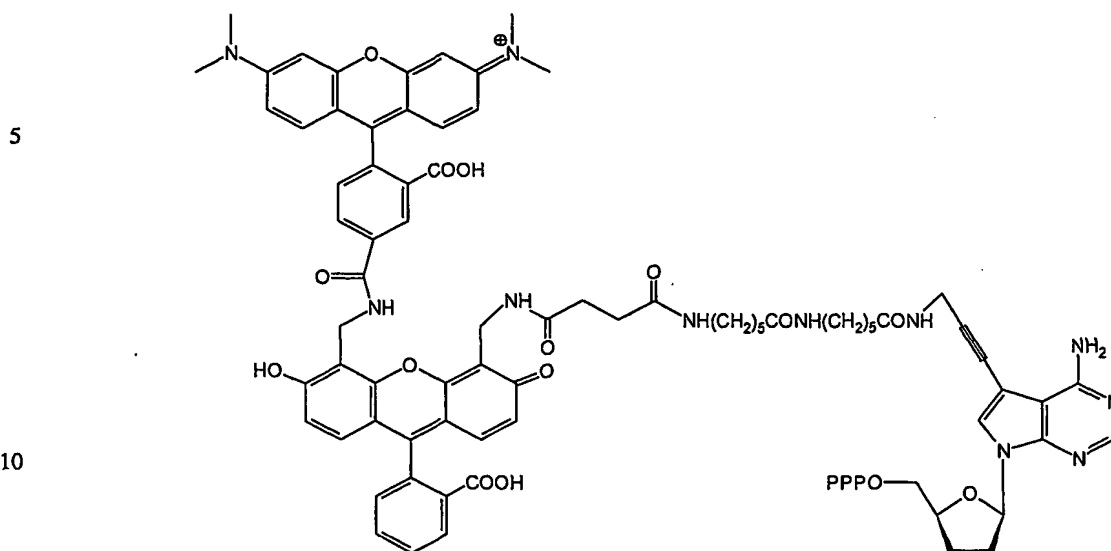
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}

14. A compound of the formula:



15. A deoxyribonucleic acid sequence comprising the nucleoside portion of one or more compounds according to any one of claims 11-14.
16. A method for determining the sequence of a nucleic acid, comprising:
- providing a sample of said nucleic acid to be sequenced, a primer nucleic acid sequence which is complementary to at least a part of said nucleic acid to be sequenced, a supply of deoxynucleotides and at least one dideoxynucleotide according to claim 8, for terminating the sequencing reaction, and a polymerase;
 - performing nucleic acid chain extension and chain termination reactions;
 - separating the oligonucleotide fragments according to size;

17. A method for determining the sequence of a nucleic acid, comprising:
- a) providing a sample of said nucleic acid to be sequenced, a primer nucleic acid sequence which is complementary to at least a part of said nucleic acid to be sequenced, a supply of deoxynucleotides and at least one dideoxynucleotide according to any one of claims 11-14, for terminating the sequencing reaction, and a polymerase;
 - b) performing nucleic acid chain extension and chain termination reactions;
 - c) separating the oligonucleotide fragments according to size.
18. A kit for DNA sequencing comprising at least one compound according to claim 7.
19. The kit of claim 18, further comprising a DNA polymerase.